

YAKUBOVICH, A. A.

1.44155-65 EPF(s)/EPF(a)-2/EPR/ENG(j)/EPA(s)-2/EPA(w)-2/EPA(h)/ENP(j)/EWT(m)
 ENP(i)/ENP(b)/T/ENK(l)/ENP(e) Po-4/Pr-4/Pa-4/Pt-7/Pu-4/Pab-10, Feb 2 WW/
 GO/RH/WH

ACCESSION NR: AP5012099 UR/0191/65/000/005/0003/0004

AUTHOR: Bessonov, A. I.; Vitushkin, M. I.; Glazunov, P. Ya.;
 Karapetyan, Sh. A.; Parfanovich, B. N.; Ryabchikova, G. G.I.
 Yakubovich, A. A.

TITLE: Unit for gas-phase radiation-induced graft polymerization

SOURCE: Plasticheskiye massy, no. 5, 1965, 3-4

TOPIC TAGS: graft polymerization, gas phase graft polymerization,
 radiation induced graft polymerization

ABSTRACT: A pilot-plant unit has been built for producing various
 graft polymerization products (combining the advantages of the con-
 stituents) by the technique of gas-phase radiation-induced graft
 polymerization in quantities sufficient for technical testing. The
 unit is suitable for grafting polymer molecules to the surface of
 mineral powders and synthetic and mineral fibers, fabrics, and films
 by irradiating them with fast electrons in an atmosphere of gaseous
 monomer and inert gas. The unit is designed to operate either 1) with
 monomers whose boiling point is above room temperature (Fig. 1 of the
 Enclosure) or 2) with monomers which are normally gaseous. In the
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first case, to prevent monomer vapor condensation in the reactor and the pipe, the liquid monomer temperature in the feed tank is always maintained 30—50C below the working gas temperature. In the second case, the gaseous monomer is fed directly from a pressure cylinder. Two reactor types are available: one specifically designed for fibers, films, and fabrics, and the other, for powders. The experimental results shown in Table 1 of the Enclosure were in good agreement with results obtained in glass ampule, indicating the feasibility and expediency of the scale-up of this process to full-scale plant equipment. "The authors express their appreciation to B. L. Tsetlin for participating in the discussion of the project and for valuable advice during startup, and to N. V. Mikhaylov, L. G. Tokareva, and Ye. V. Yegorov for valuable advice on design problems. Orig. art. has: 1 figure and 1 table, [5M]

ASSOCIATION: none

SUBMITTED: 00

ENCL: 02

SUB CODE: OC, GC

NO REF SOV: 005

OTHER: 000

ATD PRESS: 3246

Cord 2/4

I. 44135-65

ACCESSION NR: AP5012099

ENCLOSURE: 01

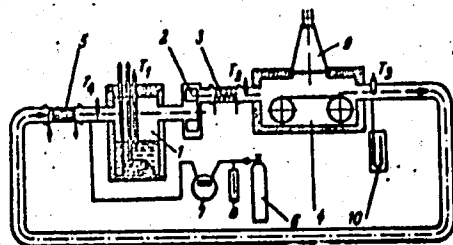


Fig. 1. Gas-phase radiation-induced graft polymerisation pilot-plant unit

1 - Feed tank; 2 - circulating fan; 3 - heater; 4 - reactor; 5 - cooler; 6 - nitrogen cylinder; 7 - gas meter; 8 - manostat; 9 - protective shield; 10 - manometer; T_1 - T_4 - thermocouples.

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ACCESSION NR: AP5012099

ENCLOSURE: 02

Table 1. Experimental results for gas-phase radiation-induced graft polymerization in a pilot-plant unit

System studied		Experimental conditions					Am't of graft polymer formed, %
Substrate	Monomer	Current density, $\mu\text{amp/cm}^2$	Dose, Mrad	Reaction temp., °C	Feed tank temp., °C	Vapor pressure, mm. Hg.	
Capron* fabric	acrylonitrile	0.1	11	75	43	240	17
same	α -vinylpyridine	0.1	10	95	55	50	34
Lavsan** fabric	acrylonitrile	0.1	7	75	43	240	5
SiO ₂	styrene	0.1	80	120	66	50	10

*[Polycaprolactum]

**[Poly(ethylene terephthalate)]

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YAKUBOVICH, A.A.

Standardisation and mechanisation of assembly operations. Vest.
 mashinost. 45 no.9:72-73 5 '65. (MIRA 18:10)

1. Voronezhskiy zavod kuznechno-pressovogo oborudovaniya.

YAKUBOVICH, A.G.

Measures for the elimination of diphtheria in Gomel' Province.
Zdrav. Belor. 6 no. 10:50-53 0 '60. (MIRA 13:10)

1. Glavnyy vrach oblsanepidstantsii Gomel'skoy oblasti (for Yakubovich). 2. Zaveduyushchiy epidotdelom oblsanepidstantsii Gomel'skoy oblasti (for Kats).
- (GOMEL' PROVINCE—DIPHTHERIA)

YAKUBOVICH, A.I., ZAYTSEV, Ye.I.

Radiometric determination of the average percentage of uranium,
radium, thorium, and potassium in rock samples. Razved. i okh.
nedr 27 no.2:33-37 F '61. (MIRA 14:5)

1. Ministerstvo geologii i okhrany nedr SSSR.
(Radioactive prospecting)

S/O80/63/036/001/016/026
D226/D307

AUTHORS:

Yakubovich, A.I. and Smirnova, V.K.

TITLE:

A study of the structure of polypiperylene
polymerized in the presence of complex
catalysts

PERIODICAL:

Zhurnal prikladnoy khimii, v. 36, no. 1,
1963, 156 - 160

TEXT:

The present work is a continuation of earlier studies (ZhPKh, 35, 1 (1962); 35, 2 (1962)) in which piperylene polymerized in the presence of metallic Li was considered. Purified piperylene was polymerized under conditions described by L.S. Bresler, (who assisted the authors in this phase of the investigation), using (a) Al (iso-C₄H₉)₂Cl + CoCl₂ (complex with EtOH) and (b) Al (iso-C₄H₉)₃ + TiCl₄ as catalyst. The polymer yields for (a) and (b) were respectively 58.5 and 60 %. Since ir spectroscopy does not give a measure of the separate contents of 1.2 and 1.4 linkages, the proportion of 1.2 links was determined by the propor-

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A study of the structure ...

S/080/63/036/001/016/026 .
D226/D307

tions of CH_3COOH and CH_3CHO in the products obtained by reductive decomposition of polymer ozonides. Oxidative decomposition of ozonides was also carried out, analyzing the resultant acids chromatographically. It was found that the polymer contained 1.2, 1.4, - 1.4, and 4.1 - 1.4 portions. The percentages of bonds were as follows: Catalyst (a): 1.2 - 17.4, 1.4 - 78.1, (1.2 + 1.4) - 33 cis and 63 trans. Catalyst (b): 1.2 - 10.5, 1.4 - 85.9, (1.2 + 1.4) - 61 cis and 36 trans. There are 2 figures and 4 tables.

SUBMITTED:

October 26, 1961

Card 2/2

AUTHOR: Yakubovich, A.L.

SOV-132-58-8-8/16

TITLE: Nuclear Geophysical Methods - an Important Reserve for Further Increasing the Efficiency of Geological Prospecting and Surveying (Yaderno-geofizicheskiy metody - vazhnyy rezerv dal'neyshogo povysheniya effektivnosti geologicheskikh poiskov i razvedki)

PERIODICAL: Razvedka i okhrana nodr, 1958, Nr 8, pp 29-37 (USSR)

ABSTRACT: Nuclear geophysical methods are at present used for prospecting and surveying of non-radioactive minerals. The author describes some of them. For the analysis of the mineral raw material, the author proposes the activating method, based on the formation and subsequent measuring of artificially created radioactive isotopes of the investigated minerals. The sample of such a mineral is exposed to irradiation by nuclear particles until a measurable quantity of radioactive isotopes of this mineral is accumulated, after which the activity of the sample is determined by the usual radiometric method. The study of spectral composition and the intensity of gamma-radiation determines the chemical composition of the neutron trapping substance. This method will especially help the core sampling of bore holes. The method of the neutronic core sampling is based on the exposure of the rock to the fast neutrons and on the measuring

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SOV-132-58-8-8/16

Nuclear Geophysical Methods - an Important Reserve for Further Increasing
the Efficiency of Geological Prospecting and Surveying

of the density of thermic neutrons, or on the measuring of secondary gamma radiation arising from neutrons trapped by nuclei of elements composing the mineral. The "roentgen-radiometric" method is based on the excitation of the characteristic radiation of atoms of investigated minerals by primary nuclear radiation and on the subsequent analysis of this radiation by a special radiometric apparatus. Special devices must be manufactured in order to apply these methods in different fields of prospecting and surveying. There are 2 diagrams, 1 graph and 9 references, 7 of which are Soviet and 1 English.

ASSOCIATION: Ministerstvo geologii i okhrany nedr SSSR (The Ministry of
Geology and Conservation of Mineral Resources)

1. Minerals--Analysis
2. Radioisotopes--Applications
3. Spectrographic analysis--Applications

Card 2/2

Yakubovich, A.L.

48-4-48/48

SUBJECT: USSR/Luminescence

AUTHOR: Yakubovich A.L.

TITLE: Application of Scintillation Counters in Radiometric Equipment for Searching and Surveying Radioactive Ore Fields (Primeneniye staintillyatsionnykh schetchikov v radiometricheskoy apparature dlya poiskov i razvedki mestorozhdeniy radioaktivnykh rud)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #4, pp 636-640 (USSR).

ABSTRACT: In order to search for and survey deposits of radioactive ores, various radiometric devices have been designed and manufactured by Soviet industry. Up to recently, this equipment used the ionization principle of investigating radioactive radiation, which has many intrinsic drawbacks.

Therefore, efforts were concentrated on designing new equipment making use of the scintillation principle.

The first sample of survey device with a scintillation counter using a naphthalene-anthracene crystal and with a photoelectronic amplifier of the FEU-19 type was constructed in 1951.

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TITLE:

48-4-48/48

Application of Scintillation Counters in Radiometric Equipment for Searching and Surveying Radioactive Ore Fields (Primeneniye staintillyatsionnykh schetchikov v radiometricheskoy apparature dlya poiskov i razvedki mestorozhdeniy radioaktivnykh rud)

In the process of improvement in 1952 an analyzing scintillation device of the LAU-52 type was constructed for rapid quantitative determinations of radioactivity of powder samples in laboratories. At present, this device is manufactured by the industry under the name of "LAS".

In 1953, a highly-sensitive and high-speed equipment using scintillation counters of gamma-quanta with automatic recording of its indications was developed for surveying uranium ores from aircraft.

The scintillation counters use crystals of NaJ-Tl phosphors. The device contains 3 such counters switched in parallel. Pulses arising in each of these counters are amplified by a linear amplifier, and their average number characterizes the total gamma-activity, which is continuously recorded by an automatic recording unit of the first channel of this device. The recording unit of the second channel carries out simultaneously recording of the hard component of gamma-radiation

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48-4-48/48

TITLE:

Application of Scientillation Counters in Radiometric Equipment for Searching and Surveying Radioactive Ore Fields (Primeneniye stsintillyatsionnykh schetchikov v radiometricheskoy apparature dlya poiskov i razvedki mestorozhdeniy radioaktivnykh rud)

which is due mainly to thorium decay products. The ratio of these two channels characterizes the spectral composition of the gamma-radiation studied and indicates the nature of the activity of the emitting field.

These devices are now manufactured by the "GEOLOGORAZVEDKA" plant as 4-channel aerogeophysical stations of the ASG-38 type. The other two channels are used for measuring the increment of the full vector of the geomagnetic field and the absolute altitude of the flight.

This device exceeds in its sensitivity the last samples of aerosurveying equipment using 72 ionization gamma-counters by 2.5 times. The high sensitivity and low background in connection with the achieved directional selectivity of gamma-radiation make it possible to improve the effectiveness of aerosurveying uranium ores.

No references are cited.

Card 3/4

SOV/5391

PHASE I BOOK EXPLOITATION

Yakubovich, Aleksandr Lazarevich

Poiskovo-razvedochnaya radiometricheskaya apparatura (Prospecting and Exploration Radiometric Equipment) Moscow, Gosgeoltekhizdat, 1960. 205 p. 3,000 copies printed.

Ed.: A. N. Yeremeyev; Ed. of Publishing House: S. S. Mukhin;
Tech. Ed.: O. A. Gurova.

PURPOSE: This book is intended for geophysicists and geologists concerned with the prospecting, exploration, and extraction of mineral deposits, as well as for technical personnel engaged in related areas and students of geological exploration at schools of higher education.

COVERAGE: The book is a development of the author's notes on measurement methods and equipment written in 1954-1955 for the course "Radiometric Methods of Prospecting and Exploration of Uranium Deposits" (Gosgeoltekhizdat, 1957). It is based on the

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Prospecting and Exploration (Cont.)

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author's lectures in courses for the improvement of geophysicists' and geologists' qualifications, on Soviet and non-Soviet literature on the subject, and on the existing instructions and technical descriptions of radiometric instruments used in prospecting and exploration. Part I of the book deals with the principles of radiometric measurements and of the designs of equipment components. Part II contains a description of individual radiometric instruments in connection with their use in each of the existing radiometric methods. The author thanks Ye. I. Zaytsev, S. M. Przhivalgovskiy, V. I. Kharlamov, and A. P. Fadeyev for their assistance, and V. L. Shashkin, who reviewed the book. Part I is accompanied by 20 references, all Soviet (including 2 translations), and Part II by 5 references, all Soviet.

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YAKUBOVICH, A.L.; DYUKOV, A.I., otvetstvennyy red.; STEL'MAKH, A.M., red.
izd-va; MADEINSKAYA, A.A., tekhn. red.; IL'INSKAYA, G.M., tekhn.
red.

[Scintillation radiometers and their application in geological
prospecting] Stsintillatsionnaya radiometricheskaya apparatura
i vozmozhnosti ee primeneniya dlia geologicheskikh poiskov i
razvedki. Moskva, Ugletekhizdat, 1958. 52 p. (MIRA 11:7)
(Prospecting--Geophysical methods--Equipment and supplies)

3.9200

36236
S/169/62/000/003/034/098
D228/D301

AUTHORS: Yakubovich, A. L. and Zalesskiy, V. Yu.
TITLE: The roentgeno-radiometric method and equipment for accelerating the analysis of the chemical composition of matter

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 3, 1962, 28, abstract 3A229 (V sb. Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, v. 4, M., Gostoptekhizdat, 1961, 187-191)

TEXT: A roentgeno-radiometric method of analyzing the elemental composition of matter has been developed. It is based on excitation of the deep-orbital electrons of atoms by means of the gamma-radiation of radioactive isotopes and on measurement of the characteristic roentgen radiation of atoms, using a scintillation spectrometer in conjunction, as a rule, with Ross differential filters or an ionization spectrometer with a proportional counter. Some merits of the roentgeno-radiometric method as compared with the technique

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D228/D301

The roentgeno-radiometric ...

of fluorescent roentgenospectral analysis are mentioned: 1) The ease with which the K-series of elements with high atomic numbers can be used for analysis which allows measurements to be made with small samples, thus eliminating errors connected with selective absorption; 2) the possibility of creating cheap and transportable equipment with an atomic supply; 3) a higher sequence sensitivity which for different elements lies in the range 0.1 - 1.0%. A defect of the method is its small resolving capacity. When using a scintillation counter it is possible to determine elements with atomic numbers, differing by 6 - 7 units from those of other elements present in commensurable quantities. The employment of proportional counters raises the method's resolving capacity and also allows elements with small atomic numbers to be analyzed. The radiation sources should possess: 1) A sufficiently high specific activity; 2) an adequately high discharge of radiation with a quantum energy sufficient to excite the atoms of the elements that are being determined; 3) the hard gamma- and beta-radiation; and 4) a half-life period of from 2 - 3 months to 1 - 2 years. These re-

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The roentgeno-radiometric ...

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quirements are satisfied by Tu^{170} and Tl^{204} , etc. The authors used a Tu^{170} source with an activity of 2.6 - 26 curies. Measurement methods in thin and saturated layers were tested together with two-layer measurements. The technique was tested in the analysis of ores, concentrates, and minerals for zircon, niobium, tantalum, total rare-earths, and other elements. /-Abstracter's note: Complete translation._7

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YAKUBOVICH, A.L.

Scintillation α -radiometer of the type RAL-1. Atom.energ. 13
no.6s615-617 D '62. (MIRA 15:12)
(Radiometer)

S/032/62/C28/007/003/011
B104/B102

AUTHORS: Yakubovich, A. L., and Zaytsev, Ye. I.

TITLE: Quick determination of boron, lithium, cadmium, and other elements with a device of the 'neutron' type

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 7, 1962, 819 - 823

TEXT: The authors describe a device (Fig. 1) to determine the contents of B, K, Li, and a few other elements with large neutron absorption cross sections by measuring the reduction of thermal neutron flux in a sample. This has the special advantage that the attenuation is independent of the type of chemical bond of the elements in question. A disk of lithium glass (2 mm thick, 30 mm in diameter) enriched with Li^6 , together with a photomultiplier, are used as a detector of slow neutrons. The scintillations caused by the reaction $\text{Li}^6(n, \alpha)\text{H}^3$ in the glass disk are photoelectrically recorded. The efficiency of recording is 97%. The polonium - beryllium source (1) has an activity of up to $10 \mu\text{c}$; the error in measurement is 2%. Elimination of the influence of neutron

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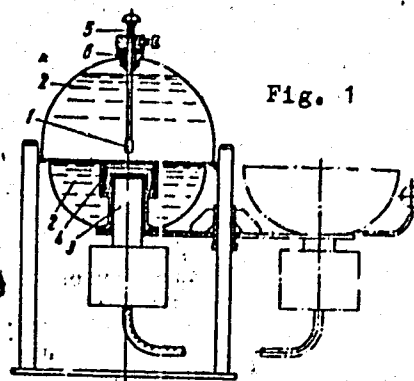
Quick determination of boron...

S/032/62/028/007/003/011
B104/B102

absorption by other elements on the measurements is studied in detail. With a sample containing 10 - 20% humidity the error is 5 - 15%. There are 4 figures and 3 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya (All-Union Scientific Research Institute of Mineral Raw Materials)

Fig. 1. Schematic diagram of the device.
Legend: (1) source; (2) moderator;
(3) counter; (4) crushed sample.



Card 2/2

YAKUBOVICH, A. I.

"Oreol" scintillation alpha-beta analyzer. *Hiul.nauch.-tekh.*
inform.VIMS no.1:45-47 '60. (MIRA 15:5)

1. Ministerstvo geologii i okhrany nedr SSSR.
(Geophysical instruments)

YAKUBOVICH, Aleksandr Lazarevich; NIKITINA, T.K., red.; MAZEL',
Ye.I., tekhn. red.

[Use of scintillation apparatus for fast analysis of
mineral resources] Uskorenniy analiz mineral'nogo syr'ya s
primeneniem stsintillatsionnoi apparatury. Moskva, Gos-
atomizdat, 1963. 130 p. (MIRA 16:9)

(Minerals--Analysis)
(Scintillation counters)

YAKUBOVICH, A.L.; ZAYTSEV, Ye.I.; ANOSOV, V.V.

Multicomponent radiometric analysis of rock samples with the
LSU-5K scintillation counter "Laura." Atom. energ. 15 no.3;
224-230 S '63. (MIRA 16:10)

(Radiometry) (Scintillation counters)

YAKUBOVICH, A.L.; ZAYTSEV, Ye.I.

Rapid determination of boron, lithium, cadmium, and some other elements by means of a "neutron"-type apparatus. Zav.lab. 28
no.7:819-823 '62. (MIRA 15:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya.
(Chemistry, Analytical) (Neutrons—Capture)

S/169/61/000/012/031/089
D228/D305

AUTHOR: Yakubovich, A. L.

TITLE: The "Rubin" portable field radiometer for mass searches for deposits of radioactive ores

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 12, 1961, 39, abstract 12A376 (Byul. nauchno-tekhn. inform. M-vo geol. i okhrany nedr SSSR, 1959, no. 4 (21), 40-42)

TEXT: The radiometer has a carrying case with five gas-filled CTC-5 (STS-5) counters and a control-panel box in which the instrument's amplifying recording scheme and supply source are mounted. The amplification and formation of impulses from the counters is made by a system of thyratrons with a cold cathode. The instrument's supply is accomplished by a stabilized voltage of about 400 v. Provision is made for the light and the acoustic indication. In addition, there is a system of the

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The "Rubin" portable...

S/169/61/000/012/031/089
D228/D305

objective scrutiny of readings by means of a threshold scheme.
[Abstracter's note: Complete translation.]

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YAKUBOVICH, A. L.

PHASE I BOOK EXPLOITATION SOV/5592

Vsesoyuznoye soveshchaniye po vnedreniyu radioaktivnykh izotopov i yadernykh izlucheniyy v narodnom khozyaystve SSSR. Riga, 1960.

Radioaktivnyye izotopy i yadernyye izlucheniya v narodnom khozyaystve SSSR; trudy Vsesoyuznogo soveshchaniya 12 - 16 aprelya 1960 g. G. Riga, v 4 tomakh. t. 4: Poiski, razvedka i razrabotka poleznykh iskopayemykh (Radioactive Isotopes and Nuclear Radiation in the National Economy of the USSR; Transactions on the Symposium Held in Riga, April 12 - 16, 1960, in 4 volumes. v. 4: Prospecting, Surveying, and Mining of Mineral Deposits) Moscow, Gostoptekhizdat, 1961. 234 p. 3,640 copies printed.

Sponsoring Agency: Gosudarstvennyy nauchno-tekhnicheskyy komitet Soveta Ministrov SSSR. Gosudarstvennyy komitet Soveta Ministrov SSSR po ispol'zovaniyu atomnoy energii

Eds. (Title page): N. A. Petrov, L. I. Petrenko, and P. S. Savitskiy; ed. of this volume: M. A. Speranskiy; Scientific ed.: M. A. Speranskiy; Executive Eds.: N. N. Kuz'mina and A. G. Ionel';

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Radioactive Isotopes and Nuclear (Cont.)

SOV/5592

Tech. Ed.: A. S. Polosina.

PURPOSE : The book is intended for engineers and technicians dealing with the problems involved in the application of radioactive isotopes and nuclear radiation.

COVERAGE: This collection of 39 articles is Vol. 4 of the Transactions of the All-Union Conference of the Introduction of Radioactive Isotopes and Nuclear Reactions in the National Economy of the USSR. The Conference was called by the Gosudarstvennyy nauchno-tekhnicheskii komitet Sovet Ministrov SSSR (State Scientific-Technical Committee of the Council of Ministers of the USSR), Academy of Sciences USSR, Gosplan SSSR (State Planning Committee of the Council of Ministers of the USSR), Gosudarstvennyy komitet Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu (State Committee of the Council of Ministers of the USSR for Automation and Machine Building), and the Council of Ministers of the Latvian SSR. The reports summarized in this publication deal with the advantages, prospects, and

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Radioactive Isotopes and Nuclear (Cont.)

SOV/5592

development of radioactive methods used in prospecting, surveying, and mining of ores. Individual reports present the results of the latest scientific research on the development and improvement of the theory, methodology, and technology of radiometric investigations. Application of radioactive methods in the field of engineering geology, hydrology, and the control of ore enrichment processes is analyzed. No personalities are mentioned. There are no references.

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Alekseyev, P. A. Present State and Future Prospects of Applying the Methods of Nuclear Geophysics in Prospecting, Surveying, and Mining of Minerals	5
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Radioactive Isotopes and Nuclear (Cont.)

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- Yakubovich, A. L., and Ye. I. Laytsev. Plant of the "Neutron" Type and Its Possible Utilization for the Analysis of the Material Composition of Rocks 180
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- Shnurman, G. A. Experience With Radiometric Investigations

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S/081/61/000/020/034/089
B117/B147

AUTHORS: Yakubovich, A. L., Zaytsev, Ye. I.

TITLE: Radiometric determination of the Clarke content of uranium, radium, thorium, and potassium in rock samples

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 20, 1961, 122, abstract 20D134 (Razvedka i okhrana nedr, no. 2, 1961, 33 - 37)

TEXT: The authors suggest for the radiometric determination of minor amounts of U, Ra, Th, and K in rock samples to measure the γ -radiation of the sample in the following four energy ranges (in keV): 100 (essentially, UX₁ radiation), 240 (ThB), 340 (RaB), and 1450 (K⁴⁰). If the conventional equivalences of determinable elements in corresponding channels are known, the content of each determinable component may be calculated by solving a system of four linear equations. With the use of a sample layer of 8 mm thickness, the analytical results are independent of chemical composition and density of the sample. In the determination of radioactive elements (time of activity measurement ~ 30 min), the absolute error for U is $\sim 1-2 \cdot 10^{-4}\%$.
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Radiometric determination of the...

S/081/61/000/020/034/089
B117/B147

for Ra and Th $\sim 1 \cdot 10^{-4}\%$, and for K $\sim 0.5\%$. In the determination of K^{40} from β -radiation, the time of measurement is 20 min, the absolute error 0.2%.
[Abstracter's note: Complete translation.]

Card 2/2

S/081/61/000/024/024/086
B138/B102

AUTHORS: Yakubovich, A. L., Zaleskiy, V. Yu.

TITLE: The X-ray radiometric method and apparatus used for the rapid analysis of chemical compositions

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1961, 144, abstract 24D20 (Sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, v. 4", M., Gostoptekhizdat, 1961, 187 - 197)

TEXT: A rapid method of analysis is suggested, which is based on the γ irradiation of the specimen by a radioactive isotope with recording of the characteristic radiation from the elements of the specimen by a scintillation or proportional counter. The radiation of the element in question is distinguished by means of a single-channel pulse discriminator. Ross differential filters are used to increase the resolving power of the method. They consist of two plates made from elements with similar Z. The thickness of the plates is chosen so that the difference between the intensities of the radiation suppressed by the filter plates will be proportional to that in the range of the spectrum between the K-absorption

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The X-ray radiometric...

S/081/61/000/024/024/086
B138/B102

edges of the plate elements. The method requires no cumbersome apparatus and can be used in field conditions. The authors designed the apparatus BMK-58 (VIMS-58) supplied with 10w from a 12v battery. Elements with $Z > 35-40$ can be analysed with it. When the total rare-earth elements were determined in ores without filter the deviation from chemical analysis data was not more than 0.2 - 0.3% for a total oxide content of up to 5%, and 0.4 - 0.6% for up to 10%. In the determination of 1 - 3% ZrO_2 with Ross filters, the deviations from chemical analysis were not more than 10 - 15%, and at higher ZrO_2 concentrations, 5 - 10%. The accuracy of analysis is not dependant on the amount of the associated element Nb in the sample. Tu^{170} is used as the γ -radiation source (activity 2 - 8 curies).
[Abstracter's note: Complete translation.]

Card 2/2

YAKUBOVICH, H-M.

KHACHVANKYAN, M.A.; ORMONT, B.; YAKUBOVICH, A.M.

On the theory of recrystallization processes. II. Influence of the
gas phase on structure transformations of chromic oxide. *Zmr.fiz.khim.*
21 no.5:575-580 My '47. (MLBA 6:12)

1. Fiziko-khimicheskiy institut im. Karpova, Moscow.
(Crystallization) (Chromic oxide)

PHASE I BOOK EXPLOITATION

80V/4397

Nauchno-tehnicheskoye obshchestvo priborostroitel'noy promyshlennosti

Priborostroyeniye i izmeritel'naya tekhnika (Instrument Manufacture and Measurement Technique) Moscow, Mashgiz, 1960. 462 p. Errata slip inserted. 3,000 copies printed.

Ed.: A.N. Gavrilov, Doctor of Technical Sciences, Professor; Tech. Ed.: A. Ya. Tikhanov; Managing Ed. for Literature on Machine and Instrument Construction (Mashgiz): N.V. Pokrovskiy, Engineer.

PURPOSE: This collection of articles is intended for scientific and technical personnel in the instrument industry.

COVERAGE: The 23 articles deal with the present state and the outlook for the development of instrument manufacture and measurement technique. New problems of design, construction, and manufacture of instruments are discussed in the first two sections. Emphasis is given to problems of automation and mechanization of production and to the application of new techniques in program control, ultrasonics, and chipless working of metals. The third section deals with new

Card 1/6

Instrument Manufacture and Measurement Technique

SOV/4397

measurement methods involving the use of ultrasonics and radio isotopes. Some theoretical aspects of metrology and measurement technique are also discussed in this section. No personalities are mentioned. References accompany several of the articles.

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Card 6/6

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D256/D301

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AUTHORS: Braslavskiy, D.A. and Yakubovich, A.M.

TITLE: Improving dynamic characteristics of sensitive elements by feed-back coupling

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 10, 1961, 11, abstract 10 V94 (V sb. Priborostr. i izmerit. tekhnika, M., Mashgiz, 1960, 55-76)

TEXT: Methods are considered of improving dynamic characteristics of electro-mechanical sensitive elements (galvanometers, logmeters, acceleration-meters, gyroscopic instruments etc.) by introducing a feed-back coupling. El.-mechanical and el. systems of feed-back coupling are discussed. Dynamic characteristics are investigated for a real feed-back coupling with parasitic time-constants present and also in case of a limited signal. 9 figures.
[Abstracter's note: Complete translation]

Card 1/1

YAKUBOVICH, A.M. (Moskva)

Operational amplifiers with zero drift compensation using the
Prinz method. Avtom. i telem. 24 no.8:1117-1129 Ag '63.
(MIRA 16:8)
(Amplifiers (Electronics)) (Electronic computers)

L 12024-65 EWT(d)/EWT(i)/EEC(f)/EED-2/EAA(h)/EWP(i) PG-L/PI-L/PK-L/PO-L/PQ-L/
 Feb IJP(c) CG/BB
 ACCESSION NR: AP5010947 U/0286/65/000/007/0131/0131

AUTHORS: Yakubovich, A. M.; Korol'kov, I. V.; Braslavskiy, D. A.; Bubnov, I. A.;
 Mironov, B. V.

TITLE: Operational amplifier. ²⁵ Class 42, No. 169878

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 131

TOPIC TAGS: amplifier

ABSTRACT: This Author Certificate presents an operational amplifier with parallel amplification channels and with automatic compensation of zero drift. To increase its reliability and accuracy of operation, it contains not less than three amplification channels operating alternately so that at any instant of time two of them are in the amplification mode. Each channel contains a dc amplifier with operation periodization and with discrete-periodic zero drift compensation by a circuit with a storage capacitor. To decrease the effect of a constant spurious signal with the breakdown of one of the channels, each channel contains a decoupling capacitor connecting the amplifier output of the particular channel through a resistance and a switching unit to the common output of the operational amplifier. The switching unit discharges the decoupling capacitor in the zero drift compensation mode.

Card 1/2

L 42024-65

ACCESSION NR: AP5010947

ASSOCIATION: Organizatsiya gosudarstvennogo komiteta po aviatsionnoy tekhnike
(Organization of the State Committee for Aviation Technology)

SUBMITTED: 08Feb64

ENCL: 00

SUB CODE: EC

NO REF SOV: 000

OTHER: 000

Card 2/2

ACC NR: AP7002729

(A₁N)

SOURCE CODE: UR/0065/67/000/001/0048/0049

AUTHOR: Malysheva, I. V.; Yakubovich, A. V.

ORG: TsNIL GUGMR

TITLE: Change in the quality of oils during prolonged storage

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 1, 1967, 48-49

TOPIC TAGS: lubricating oil, lubricant additive, *POL storage tank*

ABSTRACT: A study of the change in the quality of oils during prolonged storage in 2000-3000-m³ cylindrical steel containers in the northern and middle climatic zone was conducted along two lines: (1) experimental 3-year observation (1963-1965) of the state of MT-16p oil with AzNII-TsIATIM-1 and TsIATIM-339 additives, and DSp-11 oil with TsIATIM-339 additive for the purpose of revealing the behavior of additives during storage; (2) correlation of data on the change in the physicochemical properties of the oils (data for 1957-1965). An insignificant change of the physicochemical properties was observed. It was found that the following oils could be stored without any appreciable change in quality: MS-20 (5-7 years); MK-8 (5-8 years); MT-16p (4-5 years); DSp-11 (2 years).

SUB CODE: 11/3/ SUBM DATE: none

Card 1/1

UDC: 665.521.5

YAKUBOVICH, A. Ya.																									
A new anticorrosion insulation for steel pipe lines using Asbocement. A. Ya. Yakubovich and A. I. Selkovich. <i>Nefteyanor Khim.</i> 1937, No. 8, 48-52; <i>Chem. Zentr.</i> 1938, 1, 223. A report of an asbestos insulating material for subterranean pipe lines. M. G. Moore																									
ASB 35.4 METALLURGICAL LITERATURE CLASSIFICATION																									

1ST AND 2ND ORDERS

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CA

The reaction of ethylenediamine with carbon disulfide. Ethylene dithiocyanate. A. Ya. Yakubovich and V. A. Klimova. *J. Gen. Chem. (U. S. S. R.)* 9, 1777 (1930).--In attempting to prep. ethylenedithiocarbamate acid (I), Hofmann (*Ber.* 5, 211 (1872)) obtained a compd. which is now shown to be an internal salt of $H_2NCH_2CH_2NHCS_2H$, since in NaOH soln. it reacts with $ClCO_2Et$ to form $EtO_2CCH_2CH_2NHCS_2CO_2Et$, decamps. 58-9°. When $(CH_3NH)_2$ is treated with CS_2 in NaOH soln. at 30-60° for 2 hrs. and the mixt. is pptd. with Me_2CO , the Na salt (II) of I is obtained, m. 76-80°. A small amt. of a compd. crtg. NaOH, m. 200.5-0.8°, is also obtained. Treatment of II with 1% HCl liberates I which easily loses CS_2 and forms ethylenethiourea. II also found in small amts. in the corresponding, *disomyl* reacts with $ClCO_2Et$ to give the corresponding, *disomyl* deriv., decamps. 58-9°. When this is heated to 160-170° it loses CO_2 and $EtOH$ and forms ethylene dithiocyanate (III), b.p. 151.5-2.0°, b.p. 144°, d_4^{20} 1.2640, n_D^{20} 1.4271, MR. (III), b.p. 40.89, MR. found, 40.37. When pure, III can be kept, but if impure it decamps. to a red mass on standing.

III and $PhNH_2$ form *N,N'*-diphenyl-*N,N'*-ethylene dithiourea, m. 171-2°. When $C_6H_5O_2$ reacts with $KSCN$, small amts. of $(CH_3SCN)_2$ and $EtCH_2CH_2SCN$ are formed. H. M. Leicester

ASS-5LA METALLURGICAL LITERATURE CLASSIFICATION

647080 57

1ST AND 2ND ORDERS

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Reaction of arsenic trichloride with diisomethane.
G. I. Ibragimov and A. Ya. Yakubovich. *J. Gen. Chem.*
(U. S. S. R.) 11, 41-4 (1941). - $AsCl_3$ and CH_3N_2 react
very readily without the use of a catalyst, in contrast to
the aromatic diazo compds. CH_3N_2 (from 16 cc. MeN ,
(NO) CH_3) is directly distd., from H_2O soln., into a
cooled and shaken soln. of 18.1 g. $AsCl_3$ in 200 cc. abs.
 H_2O . Strong reaction occurs with N evolution; the re-
action mixt., after standing for 3 hrs., is freed of H_2O and
the residue fractionated in $vacuo$. The combined products
of 20 runs yielded 40 g. $ClCH_2AsCl_2$ (I), b.p. 87-88°, d₄²⁰
1.4841, and 80-82 g. $(ClCH_2)_2AsCl$ (II), b.p. 80-81°, d₄²⁰
1.4985. Both products are oils with characteristic odors,
sol. in dry org. solvents, decomp. by moisture and O_2 .
(I) in dry org. solvents, decomp. by moisture and O_2 , with
1.0 g.) and 3 cc. H_2O treated with 2 cc. 15% H_2O , with
cooling, shaken for 12 hrs., filtered and coated under 35°
yields $ClCH_2As(OH)_2$, crystd. from Me_2CO , shrinks at
1.13-5°, decamps. partially 148°, remains unchanged then
up to 250°, sol. in H_2O and hydrophilic solvents. II
(1.5 g.) in 9 cc. H_2O , cooled, and shaken with 6 cc. 15%
 H_2O for several hrs. at room temp. yields, upon repeated
vacuum evapn. with addn. of $MeOH$, $(ClCH_2)_2As(OH)_2$,
fusing at 102°, m. 117-20° (decompn.), sol. in H_2O ,
 $MeOH$, $EtOH$, Me_2CO . G. M. Konolapoff

ASAC-36A METALLURGICAL LITERATURE CLASSIFICATION

FROM DIVISION

SECTION

DATE

REMARKS

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ca

Ketene. A. Ya. Yakubovich. *Uspekhi Khim.* 14, 201-29 (1945).—Comprehensive review of the chemistry of ketene and its polymers, with 118 references.
H. M. Leicester

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

REGIONAL SYMBOLS

SECONDARY SYMBOLS

TERMINOLOGY

QUALITY OF COPY

S.C.L.

35. Synth. Rub. & Allied Products - 2N Polymer from Nitrogenous
Component

Alpha-cyanostyrene. A. Y. YAKOVLEV and
E. N. MERKULOVA (U.S.S.R.P. 64530, Chem. Abstr.
1946, 40, 6162). Benzyl cyanide is condensed with
paraformaldehyde in the presence of sodium ethyl-
ate. The reaction product is purified by distillation
in vacuo. 382N11

1944

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Simultaneous production of β -chloroalkyl chlorosulfates and α, β -dichloroparaffins. A. Ya. Yakubovich and Yu. M. Zinov'ev. U.S.S.R. 66,435, May 31, 1940. SO_2Cl_2 is treated in the coil with an olefinic hydrocarbon in the absence of catalyst or in the presence of pyridine or its derivs. The reaction products are sepd. out as usual. The reaction between SO_2Cl_2 and compds. contg. ethylenic bonds is a general one and may be carried out with olefinic or cycloolefinic hydrocarbons or their derivs. M. Hosh

ASB-514 METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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ca

Industrial methods of nitration of alkanes. Properties and applications of nitroparaffins. A. Ya. Yaskubovich. *Vyspekhi Khim.* 15, 577-61 (1946).—Crit. review, 13 litera: N. Thom

ure references up to 1946. Vincent Chavane. *Compt. rend.* 224, 400-8 (1947); cf. C.A. 40, 1443, 2907. — *u-Aminophosphonic acids*, $\text{NH}_2(\text{CH}_2)_n\text{PO}_3\text{H}_2$ (I), are prepd. from halogenated alkylphthalimides of formula $\text{C}_6\text{H}_4(\text{CO})_2\text{N}(\text{CH}_2)_n\text{Br}$ (II) by means of $\text{NaPO}(\text{OEt})_2$ in boiling C_6H_6 . NaBr ppts. and is removed by washing with water, the C_6H_6 evapd. off *in vacuo*, and the residue re- fused with concd. HCl (12 hrs. to hydrolyze the phthalimide group and the esters). $\text{C}_6\text{H}_4(\text{CO})_2\text{N}(\text{CH}_2)_n\text{Br}$ is filtered off and the filtrate evapd. on the steam bath. The resulting sirup is purified as the neutral, H_2O -sol. Ag salt while the Cl^- and PO_4^{3-} ppt. I is very hygroscopic and must be dried by infrared lamps and kept either in sealed tubes or as the metal (Na, Ba, Zn) salts. The following I were prepd.: $n = 2$, decomp. 250° ; $n = 4$, m. $133-4^\circ$; $n = 5$, prepd.; $n = 10$, m. $35-6^\circ$. The lower members of the series were insol. in alc.; the higher ones were crystd. from alc. In another method, the HBr salts of *u*-bromoalkylamines were reacted with 2 mols. $\text{NaPO}(\text{OEt})_2$. The rest of the procedure was the same except that the di-*tert*-butyl *u*-aminophosphonates could be purified by distn., e.g., $(\text{C}_4\text{H}_9)_2\text{PO}_2\text{C}_6\text{H}_4\text{N}(\text{CH}_2)_n\text{H}$, bp $134-5^\circ$. The yields for the 2 methods were about the same. In a 3rd method, *Et* 11-bromodecanoate was phosphonated and hydrolyzed to 11-phosphohendecanoic acid, m. $110-11^\circ$, which was then converted to 20% I ($n = 10$) with HN_3 . W. S. Port

AL-51A METALLURGICAL LITERATURE CLASSIFICATION

YAKUBOVICH, A. Ya.

Chlorovinyl alkyl ketones, A. Ya. Yakubovich and E. N. Merkulova. *J. Gen. Chem.* (U.S.S.R.) 16, 55-60 (1946).—AcCl (24 g.) in 40 g. CCl₄ was treated with stirring and ice-cooling with a stream of C₂H₂ concurrently with slow addn. of 50 g. AlCl₃ over 1 hr. The addn. of C₂H₂ was stopped after 11-12 hrs. after which the mixt. was treated with ice-water and was extd. with Et₂O to yield 18 g. *Me 2-chlorovinyl ketone*, b_p 38-40°, d₄²⁰ 1.2858, n_D²⁰ 1.4683; the product slowly loses HCl and changes into a dark viscous mass; semicarbazone, m. 118-19°. PhNH₂ (23 g.) in 50% Et₂O soln., treated with 12.5 g. of the ketone in Et₂O and allowed to stand overnight, yielded 13.5 g. *MeC(=NPh)CH=CHNHPh*, m. 180-0.5° (from EtOH-Et₂O); pyridinium salt (by mixing the reagents in Et₂O), m. 108°. Use of CCl₃COCl in the above reaction gave *chloroethyl 2-chlorovinyl ketone*, b_p 71-2.5°, d₄²⁰ 1.3186, n_D²⁰ 1.5079; semicarbazone, m. 121-5°. HOCH₂CH₂CN (37 g.) was added slowly to 68 g. SOCl₂ in 33.3 g. CHCl₃ and boiled for 0.5 hr. to yield 85% β-chloropropionitrile, b_p 76°, which was heated with concd. HCl in a stream of HCl for 3.5 hrs. to yield β-chloropropionic acid, b_p 105-7°, m. 34-6°, which was heated at 100-10° with PCl₅ to yield the corresponding chloride (I), b_p 70°. I (17.8 g.) in 30 g. CCl₄ treated with C₂H₂ as described above in the presence of 18.84 g. AlCl₃ yielded 2-chlorovinyl 2-chloroethyl ketone, b_p 100-1° (6 g.), d₄²⁰ 1.2992, n_D²⁰ 1.5002; semicarbazone, m. 160-70° (decolor.). G. M. Kosolapoff

la Contact method of production of acetaldehyde from acetylene in the gas phase. A. Ya. Yatsubovich, A. A. Danilevich, and N. A. Medsykhovskaya. *J. Applied Chem. (U.S.S.R.)* 19, 972-80 (1946) [in Russian].— Catalysts with $(H_3PO_4 + ZnHPO_4)$ (11.5:1 mol.) + 0.1 mol. $CuHPO_4$, 15% of the wt. of active C, gave at 250°, at a rate of 6.78 l./hr./l. catalyst, time of contact 4.5 sec., at the max. 48.5% mean conversion $C_2H_2 + H_2O = CH_3CHO$; presence of Cu^{++} , although permitting operation at a lower temp., shortens the active lifetime of the catalyst (33 hrs.) by favoring polymerization of C_2H_2 . With the Cu-free catalyst, at 350-360°, vol. of catalyst 200 ml., $C_2H_2:H_2O = 1:10$, at 10.05 l./hr./l., the yield Y in CH_3CHO was 85% of the theoretical, mean conversion ϵ 47.5%, with an active lifetime τ of 148 hrs. (defined by a decrease of ϵ to 30%). Increase of the amt. of $H_3PO_4 + ZnHPO_4$ to 30% of the wt. of the carbon, or change of the vol. ratio $C_2H_2:H_2O$ from 1:10 to 1:20, or change of the ratio $H_3PO_4:ZnHPO_4$ from 10.5:1 to 1.5:1, had little effect on Y , ϵ , and τ , except that catalysts with 30% contact mass seemed to have an approx. 15% higher activity in the initial stages. Catalysts with H_3PO_4 alone (15% of wt. carbon) are poor; they give only ϵ 30-40%. A Cu-promoted Zn-free catalyst, 15% $(H_3PO_4 + 0.0001 Cu)$, had about the same activity as H_3PO_4 ; with $H_3PO_4 + 0.06 Cu$, one had τ 80 hrs., ϵ 61%, Y 84%. Resinification of the catalyst being promoted by high Cu, the optimum compromise was found to be $H_3PO_4 + 0.01 Cu$, giving Y 91, ϵ 64.5 in τ 146 hrs., with $C_2H_2:H_2O = 1:20$. The exhaustion of the catalyst is due to a large extent to loss of H_3PO_4 , which passes from the catalyst into the aq.

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soln. of CH_3CHO as a result of a lowering of the adsorptive capacity of the carrier; after 146 hrs., the catalyst retained only 0.3-0.5% of the contact mist. Instead of the original 15%. Another possible source of loss of activity is reduction of Cu^{++} to Cu^+ . After a first and second regeneration through renewal of the contact mass, τ fell from the initial 146 hrs. to 102 and 66 hrs., resp. As against the $H_3PO_4 + Cu$ catalysts, active C alone gave only ϵ 2-5% in τ 7 hrs., whereas the promoted catalyst, even though exhausted down to 0.3-0.5% H_3PO_4 , still shows 30% of its original high activity. The catalytic reaction does proceed also with C_2H_2 , ten times dil. with H_2 .
N. Thom

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YAKUBOVICH, A. YA

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USSR/Chemistry - Sulfonation
Chemistry - Olefins

Sep/Oct 1947

"Sulfo-chlorination, a New Method of Sulfonation of Alkenes Properties and Uses of Alkene Chlorosulfonides," A. Ya. Yakubovich, Yu. M. Zinov'yev, Moscow, 17½ pp

"Uspekhi Khimii" Vol XVI, No 5

Classic reaction of sulfonation ranks with the reaction of nitration as one of the basic processes as a result of which aromatic carbohydrates are changed into their various resultant products. Gives detailed and comprehensive account of chemical reactions which occur and illustrates various steps by means of chemical formulas.

LC

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PROCESS AND PROPERTIES INDEX										TOP AND BOTTOM INDEX									
<p>The radical SO_2Cl, its structure and reactions. A. Ya. Yelkhorovich, and Ye. M. Zinze'ev. <i>J. Gen. Chem.</i></p>										<p>(U.S.S.R.) 17, 2020-47(1947).—Reactions were studied between SO_2Cl_2 and ethylene, propylene, and vinyl chloride at low temps. (30-25°) in the presence of catalysts, e.g., pyridine, and chlorides of S. The reactions are accelerated by these catalysts, resulting in the formation of 2-chloroalkyl chlorosulfites and, in the presence of pyridine, 2-chloroalkanesulfonyl chlorides. The mechanism of the reaction is interpreted as involving the radical SO_2Cl, which appears to be stabilized by resonance. A study was made of the reaction between chlorosulfites and carboxylic acids, which results in the formation of the esters of the acids with the corresponding acids. E.g., acetic acid reacts with chloroisopropyl chlorosulfite to form the acetate of 1-chloro-2-propanol, with the liberation of SO_2 and HCl. Arild J. Miller</p>									
A 50-55 A METALLURGICAL LITERATURE CLASSIFICATION										E-57-57-57-57-57									
1904 DIVISION										1904 DIVISION									
1904 DIVISION										1904 DIVISION									

CA

PROCESSING AND PREPARATION INDEX

Splitting of tertiary amines, analogous to the Braun reaction. V. A. Rudenko, A. Ya. Yakubovich, and T. Ya. Nikiforova. *J. Gen. Chem. (U.S.S.R.)* 17, 2250-8 (1947) (in Russian).—Toluene is placed in a cylindrical vessel, provided with a trap cooled with solid CO_2 attached to the vessel through a reflux condenser, and 2 tubes reaching nearly to the bottom of the cylinder. A layer of Hg is introduced so as to cover the opening of one of the tubes. After heating to 60-70° COCl_2 and Me_3N are introduced through the 2 tubes at such a rate that the reaction is completed in the liquid phase; COCl_2 is used in 10% excess over equimol. The reaction can be continued for any length of time. Distn. of the reaction mixt. gives 65-75% dimethylcarbamyl chloride, Me_2NCOCl , b. 165-7°, while a solid, which is formed simultaneously, was identified as Me_2NCl . Copious amts. of MeCl are produced during the reaction. If the reaction is conducted with ice-salt cooling, a white solid powder is formed, which on heating readily generates Me_2NCOCl . Apparently this is the product of primary addn. and may be represented by $(\text{Me}_2\text{NCOCl})\text{Cl}^-$. The high-temp. reaction may be represented by $\text{Me}_2\text{N} + \text{COCl}_2 \rightarrow \text{Me}_2\text{NCOCl} + \text{MeCl}$; $\text{Me}_2\text{N} + \text{MeCl} \rightarrow \text{Me}_2\text{NCl}$. Thus, the reaction is analogous to Braun's cleavage of amines by BrCN .

G. M. Kowlapoff

ALB-SLA METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED	INDEXED	SERIALIZED	FILED
NO	NO	NO	NO
YES	YES	YES	YES

YAKUBOVICH, A. YA.

PA 8/19T60

USSR/Chemistry -- Acridine
Chemistry -- Synthesis

May 48

"Some Experiments on the Synthesis of Acridine," A.
Ya. Yakubovich, M. Nevyabomskiy, 3 3/4 pp

"Zhur Obsheh Khim" Vol XVIII (LXXX), No 5

Acridine can be prepared by oxidizing phenyltolyl-
amine with lead oxide or, better, with a mixture of
lead and copper oxides. Yield is 20 - 25% of
theoretical. Diacridine is formed when hydrogen acts
on ms-chloracridine, in the presence of a Pd-BaSO₄
catalyst. Diacridine or acridine is formed when
active hydrogen acts on ms-chloracridine, depending
on the conditions of the reactions. Submitted 6 Jan
1947. 8/49T60

YAKUBOVICH, A. YA.

PA 04114

USSR/Chemistry - Cyanohydrins
Chemistry - Acetylation

Feb 1948

"Acetylation of Alpha-Cyanohydrins," A. Ya. Yakubovich, V. A. Rubenko, Ye. N. Merkulova, 5 pp

"Zhur Prik Khim" Vol XXI, No 2

Studies of acetylation of alpha-cyanohydrins of acetic acid with acetyl chloride and ketone. Determined that acetylation was better with ketone as the output of acetate was 73% of the computed amount. Submitted 27 Oct 1946.

64T14

YAKUBOVICH, A. Ya.

⑤
1/
 α -(4-Carboxy-3-cyclohexenyl)acrylates and their hydro-
genation products. A. Ya. Yakubovich and H. V. Yakovleva.
U.S.S.R. 73,436, Dec. 31, 1949. $\text{CH}_2=\text{CHC}(\text{CO}_2\text{H})$ is treated
with Ni carbonyl in the presence of alc. and HCl, and the
products are hydrogenated and thereby converted into α -(4-
carboxycyclohexyl)acrylate and propionate. M. Hoxeli.

11-5-54
ml

YAKUBOVICH, A. YA.

PA 28/49T2

USSR/Chemistry - Organic Compounds, of - Jan/Feb 49
Silicon

Chemistry - Silicon Compounds, Organic

"Success in the Field of Chemistry of Monomeric
Silicon Organic Compounds," A. Ya. Yakubovich, V. A.
Ginsburg, Moscow, 14 $\frac{1}{2}$ pp

"Uspekhi Khimii" No 1

Summary of all work done on the chemistry of monomeric
silicon organic compounds since 1933. Most of the
source material is by scientists other than those of
USSR.

28/49T2

1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
PROCESSES AND PROPERTIES INDEX																			
<p>Progress in the Chemistry of Monomeric Silicon-Organic Compounds. (In Russian.) A. Ya. Yakubovich and V. A. Ginsburg, <i>Uspekhi Khimii</i> (Progress in Chemistry), v. 18, Jan.-Feb. 1949, p. 46-74. Reviews work done since 1933. 173 ref.</p>																			
METALLURGICAL LITERATURE CLASSIFICATION										FROM DOMINANT									
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3RD GROUP										4TH GROUP									
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93RD GROUP										94TH GROUP									
95TH GROUP										96TH GROUP									
97TH GROUP										98TH GROUP									
99TH GROUP										100TH GROUP									

YAKUBOVICH, A. Ya.

PA 65/49T18

USER/chemistry - Nitrosyl Chloride Olefins Apr 49

"The Structure of Nitrosyl Chloride and Its Condensation With Olefins," A. Ya. Yakubovich, A. L. Lemke, 102 pp

"Zhur Obshch Khim" Vol XIX, No 4

Investigates the reaction of nitrosyl chloride with isobutylene, allyl chloride, vinyl chloride, vinylidene chloride, and trichloroethylene; prepares the dimers of the oximes of chlorisobutyric aldehyde, 1, 2-dichloro-3-nitropropene, 1, 1-dichloro-2-nitroethane, 1, 1-dichloro-2-nitroethylene,

65/49T18

USER/chemistry - Nitrosyl Chloride (Contd) Apr 49

and 1, 1, 2, 2-tetrachloro-2-nitroethane. In most cases the union of the nitrosyl chloride proceeds in conformity with the polarization of the ethylene and N-Cl bonds, the negative haloid directed to the positive carbon atom, and the positive nitroso group directed to the negative carbon atom. Discusses the structure of nitrosyl chloride and the effect of substituted halogens on the nitrosooxime rearrangement. Submitted 26 Apr 47.

65/49T18

IAKUBOVICH, A. IA. & OTHERS

RT-1100 (Syntheses of hetero-organic compounds of the aliphatic series by the diaz method. Syntheses of compounds of elements of Group V) Sintez elementoorganicheskikh soedinenii alifaticheskogo riada diazometodom. Sintez soedinenii elementov V gruppy.
Doklady Akademii Nauk SSSR, 71(2): 303-305, 1950

1ST AND 2ND DIGITS										3RD AND 4TH DIGITS									
YAKUBOVICH, A.Ya.										10									
C.A.																			
SYNTHESIS OF HETERO-ORGANIC COMPOUNDS BY THE DIAZO METHOD. SYNTHESIS OF COMPOUNDS OF ELEMENTS OF GROUP IV. A.Ya. Yakubovich, S.P. Makarov, V.A. Ginsburg, G.I. Gavrilov, and E.N. Merkulova. Doklady Akad. Nauk S.S.S.R. 72, 69-72 (1950); cf. C.A. 44, 8320a. Halides of																			
<p>tin, Pb, and Si react progressively with diazo compds. with formation of RCHX derivs. and elimination of N. Chlorides and bromides react well at 0-5° in C₆H₆ and give the entire possible spectrum of substituted products in 40-80% yields; usually the ease of reaction declines with increased degree of substitution around the central atom. The reagent ratio may control the relative ratios of the products formed only to a moderate extent. Mixed products may be similarly obtained with partly substituted halides. SnF₄ does not react, but SnCl₄ and SnBr₄ react well. SnCl₄ gives semisubstituted derivs. of 4-valent Sn; thus in Et₃O with ClH₂N₂ it gave apparently $\text{Cl}_2\text{Sn}(\text{CH}_2\text{SnCl}_3)_2\text{O} \cdot \text{Et}_2\text{O}$. In C₆H₆, high-mol. products form, apparently via formation of ClH₂SnCl₃ which reacts with SnCl₄ and stable compounds of</p>										<p>the type $-\text{SnCl}_2\text{CH}_2(\text{SnCl}_2\text{CH}_2)_n-$, polymerization being aided by traces of moisture. PbCl₄ and the NH₄ salt of chloroplumbic acid fail to react, probably owing to inactivity. Pb(OAc)₄ reacts with ClH₂N₂ yielding N, Pb(OAc)₃ and CH₃(OAc)₃. Alkylation of the Pb-X link was done only with di- or triethyl- lead chlorides when activated by Cu bronze; although chloromethyl derivs. were obtained, the chloroethyl derivs. were too unstable to be isolated. SnCl₄ and SiBr₄ react too vigorously at room temp., but give normal products at -45°; RSnCl₃ and R₂SiCl₂ react slower than SiCl₄ or RCHXSiCl₃. Higher temps. favor formation</p>									
ASD-5LA METALLURGICAL LITERATURE CLASSIFICATION																			
FROM DIVISION										FROM BOWERY									
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YAKUBOVICH, A.Ya., GINSBURG, V.A.

"Some Characteristics of the Derivates of Trichlormethylphosphonic Acid"
Dok Ak Nauk SSSR No 2, Jan 1952 pp 273-275 w-22628

YAKUBOVICH, A.YA.

Chemical Abstr.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

3
Synthesis of heteroorganic compounds of the aliphatic series by the diazo method. I. Synthesis of compounds of elements of group V: antimony, arsenic, and bismuth organic compounds. A. Ya. Yakubovich and S. P. Makarov. *J. Gen. Chem. (U.S.S.R.)* 22, 1569-74 (1952) (Engl. translation).—See C.A. 47, 8010c. II. Synthesis of compounds of group V elements—organophosphorus compounds. A. Ya. Yakubovich and V. A. Ginzburg. *Ibid.* 1676-62.—See C.A. 47, 9251g. III. Synthesis of compounds of elements of group IV. Organosilicon compounds. A. Ya. Yakubovich and V. A. Ginzburg. *Ibid.* 1821-6.—See C.A. 47, 9250c. IV. Synthesis of compounds of elements of group IV. Organotin compounds. A. Ya. Yakubovich, S. P. Makarov, and G. I. Gavrilov. *Ibid.* 1827-32.—See C.A. 47, 9257b.

YAKUBOVICH, A.Ya; GINSBURG, V.A.

Synthesis of heteroorganic compounds of the aliphatic series by the diazo method. III. Synthesis of compounds of elements of group-IV: organosilicon compounds. Zhur. Obshchey Khim. 22, 1783-7 '52. (CA 47 no.18:9256 '53) (MLRA 5:11)

YAKUBOVICH, A.Ya.; MAKAROV, S.P.; GAVRILOV, G.I.

Synthesis of heteroorganic compounds of the aliphatic series by the diazo method. IV. Synthesis of compounds of elements of group IV. Organotin compounds. Zhur. Obshchey Khim. 22, 1788-93 '52. (CA 47 no.18:9257 '53)

(MLRA 5:11)

YAKUBOVICH A. YA.

238T42

USSR/Chemistry - Lead Organic
Compounds

Nov 52

"Synthesis of Organoelemental Compounds of the
Aliphatic Series by the Diazo Method: V. Synthesis
of Compounds of Elements in Group IV -- Lead Or-
ganic Compounds," A. Ya. Yakubovich, Ye. N. Mer-
kulova, S. P. Makarov and G. I. Gavrilov.

"Zhur Obshch Khim" Vol 22, No 11 pp 2060-2063

Research was conducted into the reaction of dia-
zomethane with lead chloride, with the salt of
lead hydrochloric acid, with lead tetracetate, with
diethyl-dichloro lead and triethyl-chloro lead.

238T42

The reaction of lead organic chlorides with dia-
zomethane took place only in the presence of the
catalyst, cooper bronze, which brought about the
decomp of the aliphatic diazo compds and led to
the formation of corresponding chloro-methyl
derivs of lead. Diazoethane, in the presence of
cooper bronze, reacts with triethyl-chloro lead
to form unstable triethyl- α -chloro-ethyl lead,
which decomp into tetraethyl lead and lead chlo-
ride. Lead tetracetate reacted readily with
diazomethane to form methylene diacetate and
lead diacetate.

238T42

(CA 47 no.18:9257 '53)

YAKUBOVICH, A. Ya.

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Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

@chem
Synthesis of heteroorganic compounds of the aliphatic series by the diazo method. V. Synthesis of compounds of elements of Group IV—organolead compounds. A. Ya. Yakubovich, E. N. Merkulova, G. P. Makarov, and G. I. Gavrilov. *J. Gen. Chem. U.S.S.R.* 27, 2116-17 (1952) (Engl. translation).—See C.A. 47, 9257A. H. L. H.

YAKUBOVICH, A.YA., GINSEBURG, V.A.

Phosphinic Acids

Some properties of derivation of trichloromethyl-phosphinic acid. Dok. AN SSSR, 82, No. 2, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. UNCLASSIFIED.

YAKUBOVICH, A. YA.

USSR/Chemistry - Acetylene Derivatives 21 Jun 52

"The Reaction of Nickel Carbonyl With Monoalkyl Acetylenes," A. Ya. Yakubovich, Ye. B. Volkova

"Dok Ak Nauk SSSR," Vol LXXXIV, No 6, pp 1183-1186

The investigation was concerned with detg the laws governing the reaction between nickel carbonyl and monoalkyl acetylenes. Expts were carried out with methyl-, butyl-, and vinyl acetylene, and dipropargyl. It was found that the reactivity of the 2 reagents toward each other decreases, as the mol wt of the acetylene hydrocarbon increases, so that the temp required for reaction increases with the mol wt.

223T24

Addn of nickel carbonyl takes place according to Markovnikov's rule, i.e., the single reaction product will always be a deriv of α -substituted acrylic acid, according to the formula $4RC \cdot CH \cdot Ni(CO)_4 + R'OH + 2HCl \rightarrow 4RC \cdot COOR + H_2$. Dipropargyl, in contrast to the other compds, does not react well, giving a small yield of an ester of a monocarboxylic acid which contains an ethylene bond. It was not studied further. Presented by Acad A. N. Nesmeyanov.

223T24

Chemical Abet.
Vol. 48 No. 6
Mar. 25, 1954
Organic Chemistry

Peculiarities of bromination of phenylchlorosilanes
A. Ya. Vazubovich and G. V. Motsaev
PhSiCl₃ and C₆H₅SiCl₂ + Br₂ to 100%
Chemical reaction (Br₂); after 1 hr. on the steam bath and
blowing, the mixt. gave 20.3 g. PhSiCl₃ and 0.7 g. p-Br-
C₆H₄SiCl₂, b. 105-0° (after redist. b. 105-0°).
heating with Br₂ water 6 hrs. at 100-60° gave p-Br₂C₆H₄SiCl₂.
If the amt. of Br₂ is double, the reaction yields 4 g. p-Br₂C₆H₄SiCl₂.
Br₂, some 10.5 g. residue of polymeric (C₆H₄BrSiCl₂)_n,
some 16 g. p-BrC₆H₄SiCl₂, and 125 g. (70%) 1,4-Br₂C₆H₄SiCl₂.
SiCl₄, b. 144-0°, d. 1.054 (heated with Br₂ water as above,
this gave 1,4-Br₂C₆H₄SiCl₂, b. 144°, while heating with AlCl₃
gave m-Br₂C₆H₄SiCl₂, b. 220°, d. 1.0504. The use of 2.25 moles
Br₂ in the above reaction completed at 75-85° gave
C₆H₅Br, Br₂C₆H₄SiCl₂, and decomposition products. Similarly
unsuccessful was the attempted bromination of 2,4-Br₂C₆H₃SiCl₂
in the presence of Fe or SbCl₅, as C₆H₅Br, m.
175-0° (apparently the 1,2,6,5-isomer) was the sole product,
besides tar. The s,p-orientation by the SiCl₂ group was un-
expected.
G. M. Kosolapoff

YAKUBOVICH, A.YA.

Peculiarities of bromination of phenyltrichlorosilane. A.
Ya. Yakubovich and O. V. Molodtsov. J. Gen. Chem.
USSR, 1964, 38, 3230d. (1965) Engl. translation. — See C.A.
48, 3230d. H. L. H.

YAKUBOVICH, A. Ya.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

Formation of metalloorganic compounds in the reaction of aromatic silanes with metal chlorides. 1. Formation of aluminum organic compounds in the reaction of phenylchlorosilanes with aluminum chloride. A. Ya. Yakubovich and G. V. Motsarev. *Zhur. Obshch. Khim.* 23, 771-6 (1953); cf. *C.A.* 48, 143c. — Org. compds. of Al are intermediates in the reactions of phenylchlorosilanes with $AlCl_3$. The reactions involve: 1) can be employed for synthetic purposes. Adding 3.1 g. $AlCl_3$ to 5 g. $PhSiCl_2$ and letting the mixt. stand 48 hrs. at $25-35^\circ$ gave 50% $SiCl_4$ and a solid residue (I) which with H_2O gave 81% C_6H_6 , indicating that the intermediate was $PhAlCl_2$. If I is treated with $AcCl$ 0.5 hr. at $50-80^\circ$, then with ice- H_2O , the org. layer yields 75% $AcPh$. $PhSiCl_2$ (20 g.) was treated with 13.9 g. $AlCl_3$ and the red mass heated 10 hrs. to $70-80^\circ$ in *vacuo* with continuous removal of the $SiCl_4$ (87% recovered); the semi-solid residue treated with 13 g. PCl_5 formed a liquid, which was heated 1 hr. at $80-90^\circ$, treated with 17.2 g. $POCl_3$ (as a complexing agent to remove $AlCl_3$), the whole extd. several times with petr. ether, and the ext. distd., yielding 76% $PhPCl_2$, b. $140-1^\circ$. $PhSiCl_2$ (7 g.) treated with cooling with 4.1 g. $AlCl_3$ and kept 4 hrs. at $30-5^\circ$ turned to a deep red liquid. This was treated at -30° with H_2O acidified with H_2SO_4 and steam-distd., yielding 38% C_6H_6 and leaving a residue of a yellowish resin, corresponding to the polymer formed from the hydrolysis of $PhSiCl_2$ (on this assumption the yield of polymer was 65%). $PhSiCl_2$ (8 g.) and 8.5 g. $AlCl_3$ kept 72 hrs. at $30-5^\circ$ gave 66% $SiCl_4$ and the solid residue after treatment with H_2O yielded 61.2% C_6H_6 . $p\text{-}ClC_6H_4SiCl_2$ (5 g.) and 2.67 g. $AlCl_3$ and kept 48 hrs. at room temp., then treated with H_2O with cooling to -60° , gave 56.5% $PhCl$. The above reaction mixt. treated after 24 hrs. with $AcCl$, heated 20 min. at $70-80^\circ$, and treated with H_2O , yields 53% $p\text{-}ClC_6H_4Ac$, m. 10.6° . $m\text{-}ClC_6H_4SiCl_2$ (10 g.), 8 g. $AlCl_3$, and 5.7 g. PCl_5 , heated 2 hrs. to 80° , freed of $SiCl_4$ by distn., and the residue treated with 7 g. $POCl_3$, and extd. with petr. ether, gave 77.4% $p\text{-}ClC_6H_4PCl_2$, b. $252-3^\circ$, d. 1.4203 . Similarly was obtained 72.6% $p\text{-}BrC_6H_4PCl_2$, b. 270° , d. 1.6361 . Letting 5 g. $p\text{-}ClC_6H_4SiPhCl_2$ stand with 2.5 g. $AlCl_3$ 5 hrs. at $30-5^\circ$, followed by aq. treatment at -20° and steam distn. gave 50% $PhCl$ and a 57% residue of a silicone polymer conng. 21.2% Si . G. M. Kyzlasov

YAKUBOVICH, A. Ya.
Formation of metalloorganic compounds in the reaction of aromatic silanes with metaflic chlorides. I. Formation of aluminum organic compounds in the reaction of phenylchlorosilanes with aluminum chloride. A. Ya. Yakubovich and C. V. Motsarey. J. Gen. Chem. U.S.S.R. 23, 811-9 (1953) (Engl. translation).—See C.A. 48, 4462i. H. L. H.

YAKUBOVICH, A. A. YA.

USSR/chemistry - Silicon Organic
Compounds

Jun 53

"Concerning the Formation of Organometallic Compounds by the Interaction of Aromatic Silanes With Metal Chlorides. II. Formation of Iron-Organic Compounds on Interaction of Phenylchlorosilanes with Ferric Chloride," A. Ya. Yakubovich and G.V. Motsarev

Zhur Obshch Khim, Vol 23, No 6, pp 1059-1063

Studied the reaction of ferric chloride with phenyltrichlorosilane (I) and with diphenyldichlorosilane (II). It was found that II, in contrast to I,

273T28

reacts very readily with FeCl_3 , splitting off one phenyl radical. Discusses the reaction mechanism for the splitting of II with ferric chloride, assuming the formation of unstable org iron compds as intermediate products.

273T28

YAKUBOVICH, A. YA.

U.S.S.R.:

✓ Formation of organometallic compounds in the reaction of aromatic allenes with metallic chlorides. II. Formation of organo-iron compounds in the reaction of phenylchloroallenes with ferric chloride. A. Ya. Yakubovich and G. V. Motsarev. *J. Gen. Chem.* 48:14 (1983) (Bygl. translation).—See *C.A.* 48, 8187a. H. L. H.

USSR/Chemistry - Silicon Organic Compounds Aug 53

"The Formation of Metal-Organic Compounds by the Reaction Between Aromatic Silanes and Metal Chlorides. III. The Formation of Antimony Organic Compounds by the Reaction between Phenylchlorosilanes and $SbCl_5$," A. Ya. Yakubovich and G. V. Motsarev

Zhur Obshch Khim, Vol 23, No 8, pp 1414-1417

Studied reactions of phenyltrichlorosilane, diphenyldichlorosilane and its p,p'-dichloro deriv with both $SbCl_5$ and $SbCl_3$. Found that the secondary

270129

chlorosilanes are readily split with $SbCl_5$ to form primary trichlorosilane and $SbCl_3$, and that the aryl radical which has been split off is converted to the chloro deriv.

(CA 47 no. 22: 12281 '53)

270129

YAKUBOVICH, A. YA.

USSR/Chemistry - Phosphorus Organic Compounds Sep 53

"Synthesis of Organoelemental Compounds of the Aromatic Series by the Reaction of Aryl Silanes with Aluminum Chloride and Halides of Various Elements. I. Organophosphorus Compounds," A.Ya. Yakubovich and G.V. Motsarev

Zhur Obshch Khim, Vol 23, No 9, pp 1547-1552

The reaction of PCl_3 with organocalcium compounds (obtained by the reactions of arylchloro silanes with $AlCl_3$) produced primary arylchlorophosphines with good yields. This method can also be used to

268T32

obtain arylchlorophosphines containing in the ring substituents like Cl, Br, and CH_3 . PCl_5 on reacting with phenyltrichlorosilane and $AlCl_3$, forms phenyltetrachlorophosphine, which is readily converted to the acid chloride of phenylphosphonic acid. Unlike PCl_5 , phosphorus oxychloride does not produce compounds with the C-P bond in an analogous reaction.

268T32

YAKUBOVICH, A. Ya.

CATALYSTS

C.A. V-48
Jan 10, 1954
Organic Chemistry

Formation of aluminosilane compounds in the reaction of phenylchlorosilanes with aluminum chloride. A. Ya. Yakubovich and G. V. Motsarev, *Doklady Akad. Nauk S.S.S.R.* 88, 87-9 (1953). Treatment of PhSiCl_3 with AlCl_3 at $30-5^\circ$ gave 60% SiCl_4 and apparently PhAlCl_2 , since treatment of the product with H_2O gave C_6H_5 , with AcCl gave AcPh , and with PCl_5 gave PhPCl_2 in yields of 55.5, 75, and 83.4%, resp. Ph_2SiCl_2 reacts with AlCl_3 also at room temp. but the products depend on proportions of reagents. At 1:1 molar ratio, treatment with H_2O yields 38% C_6H_5 and 65% polymer (from hydrolysis of PhSiCl_3); 1:2 Ph_2SiCl_2 - AlCl_3 yields 60% SiCl_4 and 61.2% C_6H_5 . Similarly, $p\text{-ClC}_6\text{H}_4\text{SiCl}_3$ gave 53% $p\text{-ClC}_6\text{H}_4\text{H}$, and 77.4% $p\text{-ClC}_6\text{H}_4\text{PCl}_2$, resp., while $p\text{-BrC}_6\text{H}_4\text{SiCl}_3$ gave 72.0% $p\text{-BrC}_6\text{H}_4\text{H}$, $p\text{-ClC}_6\text{H}_4\text{SiCl}_3$ with 1 mole AlCl_3 gave PhCl and the polymer from hydrolysis of PhSiCl_3 , indicating that the halogenated Ph group is the first to be cleaved. (S. M. Kosolapoff)

(2)

6

8-31-54
JST

YAKUBOVICH, A. YA.

Peculiarities of halogenation of phenylchlorosilanes.
 A. Ya. Yakubovich and G. V. Morozov. *Dokl. Akad. Nauk SSSR* 1983, 261, 1043. The chlorination and bromination of PhSiCl_3 and PhSiCl_2Br were examined. Cl_2 or Br_2 and PhSiCl_3 in the presence of catalysts (Fe , AlCl_3 , iodine, SnCl_4) react energetically with formation of the corresponding halogenated derivatives. Under different temperatures and reagent ratios it is possible to isolate the entire series from mono- to penta-halo derivatives. (cf. U.S.S.R. author cert., 77,730(1949); 78,469(1940)), while Br_2 gives only mono- and di-halo derivatives. In the chlorination of PhSiCl_2Br the only individual substances formed is the mono-halo derivative; more extensive reaction gives a mixture of mono- and di-halo derivatives. Chlorination occurs without catalysts even at 20°C. with other PhSiCl_3 and PhSiCl_2Br . The reactions are accompanied by a side reaction which depends on the catalyst; this side reaction, involving cleavage of the C-Si link, is named destructive halogenation and is more pronounced with PhSiCl_3 . Thus with PhSiCl_3 and AlCl_3 it occurs to a noticeable extent (other less active catalysts are ineffective), but with PhSiCl_3 it occurs also with FeCl_3 and SnCl_4 . The extent of this reaction also depends on the halogen, being more pronounced in polybromination than in polychlorination. The products are halogenated benzene derivatives and the corresponding chlorosilane derivatives. Iodine as a catalyst does not produce this side reaction. The products were identified by hydrolysis with H_2O and treatment with AlCl_3 (cf. C.A. 48, 143f). The halogenation of PhSiCl_3 yields exclusively the *p*-Cl (or Br) $\text{C}_6\text{H}_4\text{SiCl}_3$ derivative, which was not expected. 2,4-dihalo derivatives are formed in the third step. As the no. of hydrogen atoms in the ring increases, the cleavage of C-Si link with H_2O becomes more difficult. PhSiCl_3 reacts at 100°, the mono-halo derivative at 140-160°, higher halo derivatives incompletely even at 240°. No reaction occurs with dry Br_2 and I_2/SnCl_4 even at 140°C. H_2O is essential for this reaction. The halogenated derivatives are distillable in *vacuo* and are

YAKUBOVICH, A. Ya.

62
 Addition of nitroxy chloride to fluorinated olefins. II.
 A. Ya. Yakubovich, V. A. Shpanski, and A. L. Lemke.
 Zhur. Obshch. Khim. 24, 2267-68 (1954); cf. C.A. 44,
 1011b. — A soln. of 17 g. Na in 650 g. BuOH was treated at
 100° over 3-4 hrs. with 74 g. C_2H_5Cl yielding as a distillate
 about 1 g. CH_3CHCl , b. -72° to -71°. This (10 g.) and
 10.5 g. NOCl kept in sealed tube 3 days gave $CHClFCH_2Cl$,
 9.1 g. b. 77-113° (crude), and 54% $CHClFCH_2NO_2$, b.
 55.5°, d₄ 1.4961, n_D 1.4644. Treatment of $(CHCl)_2$ with
 SbF₅ in glass with activation by SbF₃ and Br gave $CHClF$.
 $CHCl_2$, which was converted conventionally to $CH_2=CHCl$.
 This (18.5 g.) and 13 g. NOCl kept 72 hrs. in sealed tube
 gave 45% $CHClFCH_2NO_2$, b. 76-85° (crude), b. 76-8°,
 d₄ 1.5749, n_D 1.4472, which decomposes in storage with
 PhNH₂; it gave $PANHCHFC(=NO)NHPA$, m. 157°. To
 70 g. C_2H_5Cl was added a soln. of 11.5 g. Na in 300 ml.
 iso-AmOH, yielding a distillate of 37 g. CCl_2CH_2 , b. 37.5°.
 This (23.5 g.) and 15 g. NOCl kept 7 days in a sealed tube
 gave 25 g. crude trichlorofluoronitroethane, b. 64-70°. Re-
 distn. gave a substance, b. 30°, b. 53.5°, which contained
 Cl but not N, along with 55% $CHClFCH_2NO_2$, b. 64-70°
 (crude), b. 68-9°, d₄ 1.677, n_D 1.399. Heating in a steel
 autoclave 1 kg. C_2H_5Cl with 800 g. 99% dry HP and 500 g.
 $SbCl_5$ 5 hrs. to 165° at 40-5 atm. followed by distn. gave
 870 g. mixed products which after fractionation gave 520 g.
 CCl_2FCHCl_2 , b. 72-4°. This (150 g.) added in 2 hrs. to 80
 g. Zn dust in 300 ml. EtOH, followed by 60 g. Zn dust and
 refluxing 2 hrs. gave 40 g. CF_2CHCl_2 , b. -18.5°. This

(30 g.) and an equiv. amt. of NOCl kept in sealed tube 12
 hrs. at 0° in proximity of an electric light bulb showed no reac-
 tion; after 72 hrs. at room temp. the mixt. yielded a complex
 mixt. from which was isolated 2 g. $C_2Cl_4CF_2NO_2$, b. 90°.
 d₄ 53°, d₄ 1.597, n_D 1.3982. The main part of the mixt.
 was a yellow viscous mass which gave some $C_2H_5O_2N_2Cl_2F_2$,
 whose structure was undetd.; this substance, b. 132°, d₄
 1.751, gives only a trace of ionic Cl in H₂O, but reacts with
 aq. NaOH. Heating in an autoclave 1 kg. C_2Cl_4 , 450 g.
 $SbCl_5$, and 850 g. 99% HP over 5 hrs. to 160° (45-50 atm.
 final pressure) gave 710 g. crude products which on distn.
 gave 150 g. CCl_2FCHCl_2 (I), b. 47.7°, along with other prod-
 ucts including 85 g. CF_2CHCl_2 , b. 90-2°. I (150 g.)
 added in 3 hrs. to 80 g. Zn dust in 30 ml. EtOH, followed by
 40 g. Zn dust and refluxing 1 hr., gave 57 g. CF_2CHCl_2 , b.
 -27.5°. This (57 g.) and 39 g. NOCl in sealed tube 60
 hrs. gave 35% unreacted materials and 62 g. products;
 distn. gave trichlorotrifluoroethane and 1 $CF_2CHCl_2NO_2$, b.
 77-8°, d₄ 1.6202, n_D 1.3727. The addn. reactions of NOCl
 occur in accord with the expected polarity of the unsatd.
 link; the pos. NO group adds to the m.g. C atom.

G. M. Kosolapov

(2)

YAKUBOVICH, A. Ya.

USSR/Chemistry

Card : 1/1

Authors : Yakubovich, A. Ya., Shapnskiy, V. A., and Lemke, A. L.

Title : Condensation of fluorinated olefins with nitrosyl chloride

Periodical : Dokl. AN SSSR, 96, Ed. 4, 773 - 776, June 1954

Abstract : The condensation of fluorinated olefins (vinyl fluoride, 1, 2-fluorochloro-ethylene, 1-fluoro-2, 2-dichloroethylene, 1, 1-difluoro-2-ethylene chloride, trifluorochloro-ethylene) was carried out by a conventional method at room temperature. The molar ratio of the reagent was 1:1. During fractional distillation of the reaction mixture, the authors obtained a compound with boiling point of 55.5° plus a nitrogen-free substance (1, 2-dichloro-1-fluoroethane). Analysis, study of the molecular weight, and properties of this substance showed that it is a nitro-compound of the $C_2H_3FCINO_2$ composition. One reference.

Institution : ...

Presented by: Academician I. L. Knunyant, March 10, 1954

USSR/ Chemistry - Metal halides

Card 1/1 Pub. 22 - 34/63

Authors : Yakubovich, A. Ya., and Motsarev, G. V.

Title : ~~XXXXXXXXXXXXXXXXXXXX~~
Effect of metal halides on the change in orientation of the silyl chloride group and the mechanism of their dearylation effect.

Periodical : Dok. AN SSSR 99/6, 1015-1018, Dec 21, 1954

Abstract : Experiments show that the SiCl_3 -group in phenyltrichlorosilane, due to its electron-acceptor properties, should serve as an orientation factor of the second order and should direct other substitutes into meta-position with respect to itself causing thereby a general deactivation of the benzene nucleus during reactions of electrophilic substitution. The so-called dearylation effect of various metal chlorides, with respect to phenylchlorosilanes, is explained. The specificity of reactions leading to the displacement of aromatic silanes in the presence of metal halides is explained by the formation of specific addition compounds of arylchlorosilanes with metal halides. Nine references: 6-USSR; 2-German and 1-USA (1900-1954).

Institution:

Presented by: Academician I. L. Knuryants, July 15, 1954

YAKUBOVICH, A.Ya.; MOTSAREV, G.V.

Effect of the nature of the catalyst on the flow of the destructive
halogenation of phenylchlorosilanes. Zhur.ob.khim. 25 no.9:1748-1752
S '55. (Halogenation) (Silanes) (MIRA 9:2)

A. Ya Yakubovich

Distr: 4E1j/2E2c(j)/4E3a

Halogenation of organic silanes. IV. Preparation and properties of chloro and bromo derivatives of p-tolylsil-chlorosilane. O. V. Matveev and A. Ya. Yakubovich. Zhur. Obshchei Khim. 27, 1318-30 (1957); cf. C.A. 48, 32884; 51, 4982a. Chlorination of 20 g. p-MeC₆H₄SiCl₃ (I) and 0.1 g. SbCl₅ for 40 min. at 22-60° to 2.9 g. wt. gain gave 64.7% Me₂ClC₆H₄SiCl₂ (II), bp 130-7°; purer product, bp 132-3°, d₄²⁰ 1.3948. Heated with Br-H₂O in a sealed tube it gave 71% MeClBrC₆H₄, which oxidized with K₂Cr₂O₇-H₂SO₄ to 81.1% 2-chloro-4-bromobenzoic acid, showing that the silane was the m-chloro-p-tolyl deriv. Further chlorination of I as above, finally at 65-70°, until a 20 g. sample gained 6 g. gave 16.2 g. MeCl₂C₆H₄SiCl₂, bp 160-6°, bp 161-4°, d₄²⁰ 1.5126, probably a mixt. of 3,5- and 3,6-di-chloro derivs. Further chlorination to 8.8 g. gain gave from a 20 g. sample of 120.8 g. Cl₃MeC₆H₄SiCl₂, bp 168-72°, m. 44-7°, a probable isomer mixt. Attempts to induce deeper chlorination at 95-110° resulted in wt. gain of but 10.4 g. and gave some pentachlorotoluene, m. 218-19°, tetrachlorotoluene, m. 100-10°, and trichloro derivs. of I, isolated in part as polysiloxanes after aq. treatment. Chlorination of 60 g. I without catalyst at 22-5° 15 hrs. gave no wt. gain; continuation at 95-1° 13 hrs. gave 4.8 g. II mixed with its Cl(ClCH₃) analog, bp 130-3°, d₄²⁰ 1.4120. Redistn. gave 7 g. 3,4-Cl(ClCH₃)C₆H₄SiCl₂, bp 135-7°, d₄²⁰ 1.4645 (with Br-H₂O this gave after oxidation with K₂Cr₂O₇ 2-chloro-4-bromobenzoic acid). Adding 17.6 g. Br to 22.2 g. I and 0.1 g. powd. Fe and heating finally 20 min. to 60° gave 60.2% 3,4-BrMeC₆H₄SiCl₂, bp 130-7°, d₄²⁰ 1.6320, which slowly crystall.; with Br-H₂O it gave a dibromotoluene, b. 236-40°, which oxidized to 2,4-dibromobenzoic acid, m. 171-3°. Similar bromination of I but with a double proportion of Br gave 23.1 g. dibromo I, bp 163-6°, m. 66-63°, which treated with

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G.V. MOTSAKEV, A.YA. YAKUBOVIK

Br-H₂O, followed by oxidation, indicated the presence of various isomers, probably 3,5- and 3,6-dibromo-I. Attempts to induce deeper bromination with more Br and higher reaction temp. (90°) gave SiCl₄Br and mixed tetra- and pentabromotoluenes, along with some tribromotoluenes. An aq. treatment of the residues gave a polysiloxane based on dibromo-I. When 13.6 g. Br was added in 1.5 hrs. to 19.2 g. I and the mixt. heated 13.6 hrs. at 90-5° there was obtained 16 g. 3,4-Br(BrCH₃)C₆H₃SiCl₃, bp 148-50°, d₄²⁰ 1.6353, confirmed by treatment with Br-H₂O followed by oxidation.

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YAKUBOVICH, A. Ya.

MOTSAREV, G.V.; YAKUBOVICH, A.Ya.

Halogenation of aromatic silanes. Part 5: Formation and properties
of chlorobenzyl- and chlor - Π - tolyltrichlorosilanes containing
chlorine in the aliphatic part of the radical. Zhur.ob.khim. 27
no.10:2786-2790 0 '57. (MIRA 11:4)
(Silane) (Halogenation)

Yakubovich et al.

79-2-5/64

AUTHORS: Yakubovich, A. Ya., Soborovskiy, L. Z., Muler, L. I., Payermark, V. S.

TITLE: Syntheses of Vinylmonomers. 1. α -Substituted Derivatives of Vinylphosphinic Acid (Sintezy vinilovykh monomero. 1. α -zameshchennyye proizvodnyye vinilfosfinovoy kisloty)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 317-319 (USSR)

ABSTRACT: Of the alkenylphosphine derivatives the α -methylvinylphosphinic acid (reference 1), the diethylether of α -carbomethoxyvinylphosphinic acid (reference 2) and the diethylether of cyanovinylphosphinic acid (reference 3) are known. The authors synthesized some derivatives analogous to the above-mentioned compounds by the method of phosphinoxidation. In the oxidation of the mixture of methyl acrylate and phosphorus trichloride by means of oxygen the chlorine anhydride of chlorocarbomethoxyethylphosphinic acid forms. The attempts to produce an analogous chlorine-substituted derivative of vinylphosphinic acid, which was not described in publications, according to the method by Pudovik (reference 6) from vinylidene chloride and dialkylphosphite failed. Chlorocycanoethylphosphine derivatives by whose dehydrochlorination the compounds of cyanovinylphosphine can be obtained were synthesized by means of phosphinoxi-

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79-2-5/64

Syntheses of Vinylmonomers. 1. α -Substituted Derivatives of Vinylphosphinic Acid

dation of vinyl cyanide. The liquid isomer under the influence of triethylamine easily separates the hydrogen-chloride elements and forms the dimethylester of cyanovinylphosphinic acid; the position of the cyanogen group has not yet been determined for this compound. The attempts of synthesizing the chlorocycanoethylphosphine derivatives by addition of phosphorus pentachloride to vinyl cyanide did not yield any positive results. The chlorination of acrylonitrile with the formation of dichloropropionitrile can even be observed at $-(15 - 20^{\circ}\text{C})$. The dimethylether of vinylphosphinic acid, not described earlier, was synthesized according to the usual method. The ethers of the substituted vinylphosphinic acid form polymers and copolymers with other vinylmonomers. Summary: 1) By phosphin-oxidation of methylacrylate and acrylonitrile, chlorine anhydrides of the corresponding chlorocarbomethoxy- and cyanochloro-substituted ethylphosphinic acids were obtained. On treatment of the latter their ether was obtained. 2) By dehydrochlorination of the above-mentioned ethers the cyanogen chloride and carbon chloride methoxy-substituted ethers of vinylphosphinic acids were synthesized. There are 6 references, 4 of which are Slavic.

SUBMITTED: April 25, 1957
 AVAILABLE: Library of Congress
 Card 2/2